

REMARKS

Objections

The Examiner objected to paragraph 30 and the abstract. Both have been amended.

The Examiner objected to claims 21-25. Claim 21 was amended to remove "transducer material." Claim 24 has been amended for consistency.

35 U.S.C. § 112, first paragraph:

The Examiner alleges that the specification does not disclose the thermal conductivity of the transducer material or the backing material and does not disclose the acoustic absorption of the backing materials. The claimed thermal conductivity is comparative, so absolute values are not needed. Further, materials are disclosed, and thermal conductivity is a known characteristic of a material.

Paragraph 29 notes acoustic absorption for the first material. The second material is noted as known attenuation material. A further recitation of actual attenuation numbers is not needed.

35 U.S.C. § 102(e)

Claims 10-11 and 15-16 were rejected pursuant to 35 U.S.C. § 102(e) as being anticipated by Baumgartner, et al. (U.S. Patent No. 6,831,394).

Independent claim 10 recites, *inter alia*, a backing block including a block of material having substantially no acoustic attenuation in a range of frequencies.

In one embodiment, Baumgartner, et al. show a backing block bonded with a thin layer of acoustically transparent epoxy or laminated intervening layer (col. 5, lines 19-23). This provides a thin bond line to avoid reflection (col. 7, lines 14-17). This thin layer of bond or epoxy is not a block in a backing block.

Baumgartner, et al. also note an embodiment with an intervening layer of acoustic impedance matching material or flexible printed circuit board (col. 5, lines 26-

34). This matching layer may be included in the laminated stack (col. 6, lines 7-10). This embodiment provides an intervening layer, not a block in a backing block. This intervening layer may match (transition) acoustic impedance, but there is no disclosure of a lack of acoustic attenuation in such a layer.

Claims 1, 3-8, 13-14, 17-25, and 27 were rejected pursuant to 35 U.S.C. § 103(a) as being unpatentable over Baumgartner, et al. in view of Proctor, Jr. (U.S. Patent No. 4,782,701).

Claim 1 recites a backing block with an anechoic surface. As noted by the Examiner, Baumgartner, et al. do not disclose this limitation.

Proctor, Jr. is relied on for this limitation. However, a person of ordinary skill in the art would not have used the backing of Proctor, Jr. with Baumgartner, et al.

First, the backing of Proctor, Jr. requires too large of a volume for use with an array of elements. Baumgartner, et al. provide backing for an array of closely spaced elements (col. 4, lines 45-48). Proctor, Jr. teaches that it is essential to have an extended compound backing (col. 3, line 53), providing dimensions of the backing that are significantly larger than the active element (col. 4, lines 57-58). Accordingly, Proctor, Jr. provides a backing for a single element. Given an array of elements, the essential larger backings for each element would not work. One such surface for the entire array would not have been used due to the limited space available in transducer probes.

Second, the backing for Proctor, Jr. is specifically for tangential motion sensing (col. 1, lines 22-27). Proctor, Jr. teaches away from transducers and backing for measuring the normal component (col. 2, lines 24-27). Yet, it is this very normal component to be used by the array of Baumgartner, et al. A person of ordinary skill in the art would not have used the backing for dealing with tangential motion sensing of Proctor, Jr. as a backing for dealing with the normal motion sensing.

Claims 17, 21, and 24 are allowable for the same reason as claim 1.

Claim 24 is allowable for another reason. Proctor, Jr. shows an angled surface 12 for many reflections (figures 1a and 2; and col. 4, lines 59-63). Rayleigh waves or vibrations are mentioned as arriving at the transducer (col. 2, lines 28-36). However, Proctor, Jr. does not suggest or show a Rayleigh dump surface as recited in claim 24.

Rayleigh waves are not a dump surface. The angled surface 12 is not a Rayleigh dump surface.

Dependent claims 4-9, 11-16, 18-20, 22-23, 25, and 27 depend from one of the independent claims, so are allowable for the same respective reasons. Further limitations patentably distinguish from the cited references.

Claims 4, 13, 19, and 22 recite a Rayleigh dump, so are allowable for the same reasons as claim 24.

Claim 5 recites the anechoic surface being at an interface of the backing materials. Proctor, Jr. shows a cone shape at the interface such that the element is beneath one surface of the cone to reflect away from the cone (see Figs. 1a and 2). This interface alone is not anechoic.

Claims 9 and 12 recite aluminum or AL alloy filler. Baumgartner, et al. use tungsten to get the desired impedance match with silicon. Sudol, et al. note that AL has a lesser impedance. A person of ordinary skill in the art would not have used AL to back the silicon of Baumgartner, et al.

Claim 27 recites a waveguide. Miller, et al. teach an anti-waveguide, not a waveguide.

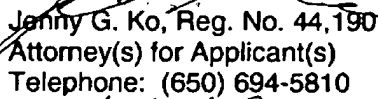
CONCLUSION:

Applicant respectfully submits that all of the pending claims are in condition for allowance and seeks early allowance thereof. If for any reason, the Examiner is unable to allow the application but believes that an interview would be helpful to resolve any issues, he is respectfully requested to call Craig Summerfield at (312) 321-4726.

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